

REMARKS

The Applicants thank the Examiner for the helpful telephone interview on January 23, 2008. The Claims have been amended in view of the cited prior art and comments by the Examiner.

Claims 1-20 are pending in the application. In the Office Action made final at hand, those claims are rejected.

Claims 1, 9, 11 and 19 have been amended to overcome the rejections under 35 U.S.C. § 112, second paragraph.

Claims 1-20 are rejected under 35 U.S.C. §102(b) as being anticipated by Ichikawa (U.S. 5,266,930A). In response to the Section 102(b) rejection, the Applicants respectfully submit that Claims 1-5, 7-15 and 17-20, as amended, are not anticipated by Ichikawa. Reconsideration is respectfully requested.

Claim 1, as amended, recites a display assembly mounted inside the headgear to a lower headgear portion to be located below at least one of the user's eyes so as not to obstruct the user's vision. The display assembly has an adjustable mount and a viewing display mounted to the adjustable mount with direct viewing optics facing the user and positioned inward from the lower headgear portion for displaying information. The direct viewing optics are located on the adjustable mount in a position below the user's eyes so that for distance vision, the line of sight of the user passes over the direct viewing optics. The information can be visible when at least one of the user's eyes looks downwardly at the viewing display where the direct viewing optics face and are substantially inline with at least one of the user's downwardly looking eyes. The display assembly can be adjusted by the user while the headgear system is worn in order to change orientation of the viewing display and the direct viewing optics. The display assembly has a first rotatable joint that is rotatable about a rotatable horizontal axis for allowing the display to be tilted upwardly and downwardly, and a second rotatable joint that is rotatable about a rotatable vertical axis for allowing the display to rotate about the vertical axis. The display is supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides. Claim 11, as amended, is a method claim that generally parallels Claim 1, as amended.

Claim 9, as amended, recites a display assembly having a first rotatable joint that is rotatable about a rotatable horizontal axis for allowing the display to be tilted upwardly and downwardly, and a second rotatable joint that is rotatable about a rotatable vertical axis for allowing the display to rotate about the vertical axis, the display being supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides. Claim 19, as amended, is a method claim that generally parallels Claim 9, as amended.

Claims 1 and 11 are amended to recite "the display assembly having a first rotatable joint that is rotatable about a rotatable horizontal axis for allowing the display to be tilted upwardly and downwardly, and a second rotatable joint that is rotatable about a rotatable vertical axis for allowing the display to rotate about the vertical axis, the display being supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides." Furthermore, Claims 9 and 19 are amended to recite, "the display being supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides."

Support for these amendments is found at least in FIGs. 1-3 as well as on page 5, line 9, through page 6, line 14, page 7, lines 6-22, and page 8, lines 9-21 of the Specification as originally filed. Finally, the dependencies of Claims 7 and 17 have been amended.

In the present invention, the display assembly can be mounted to the lower headgear portion and have a viewing display mounted to an adjustable mount with direct viewing optics facing the user and positioned inward from the lower headgear portion for viewing information and images inside the headgear. The direct viewing optics can be located on the adjustable mount in a position for being below the user's eyes so that for normal distance vision, the line of sight of the user passes over the direct viewing optics. Such a position does not significantly obscure the user's field of vision of the real world scene. The information and images can be visible when the user's eye looks downwardly at the viewing display where the direct viewing optics are positioned to face and are substantially in line with the downwardly looking eye. By being substantially in line with the downwardly looking eye, the information and images can be seen clearly and with sufficient brightness. If the viewing display is not sufficiently aligned and is at an undesirable angle, the images can be difficult to see or possibly unviewable, due to

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distortion and significant reduction in viewable brightness of the viewing display. In the present invention, the direct viewing optics can face and be substantially in line with the downwardly looking eye, so that the viewing display can be viewable at a position of maximum brightness, and the effect of ambient daylight reflecting off the viewing display, which can obscure viewing, can be limited.

The claimed display assembly, with direct viewing optics, can be adjusted to change the orientation of the viewing display inside the headgear and thereby compensate for different users. For example, referring to the embodiment depicted in FIGS. 1-5, tilting display 20 up and down relative to the user's head 32 about a first rotatable joint about the horizontal axis H can adjust for the vertical position of eyes 34 or 36. Rotating display 20 about a second rotatable joint about vertical axis V can adjust for the horizontal or lateral position of a particular eye. These adjustments can change the position of display 20 and the direct viewing optics about two axes of rotation in order to position the display and the direct viewing optics in an orientation suitable for a particular location of the eye 34 or 36. Display 20 can be supported along horizontal axis H by a first rotatable joint between upright side members 18 that extend upright or vertically from a second rotatable joint and surround vertical axis V on opposing sides. This joint configuration can provide both horizontal H and vertical V axes in a manner that can be small and sufficiently compact to fit within the space constraints of headgear, such as a helmet, and yet provide enough room to be adjusted by a gloved hand.

In contrast to Applicant's claimed display assembly, Ichikawa discloses in FIG. 1 helmet 5 having wind shield 6. A display unit 11 is positioned in the lower portion of helmet 5 and angled to face away from the user for projecting images onto wind shield 6 of helmet 5 for viewing. Windshield 6 forms the viewing display and is positioned outward relative to lower portion of helmet 5 and must be lowered into position in front of the user's eyes for viewing. In Ichikawa, the user does not view images by looking at direct viewing optics on display unit 11 inside helmet 5. Instead, the user has to look at windshield 6, which is positioned outward relative to the lower headgear portion, and where the images are projected. Referring to FIG. 23, it is possible that the projected images could be in the normal field of vision and become a distraction.

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The display unit 11 in Ichikawa is elongate and the top of display unit 11 is mounted between horizontal holding arms 17 by a horizontal support shaft 18 (FIGs. 2 and 3). Horizontal holding arms 17 extend horizontally from a vertical plate shaped unit holding member 15. Unit holding member 15 is mounted to helmet 5 by horizontal pin 16 that is oriented 90° relative to support shaft 18 and is positioned away from horizontal holding arms 17 near the bottom of display unit 11. Horizontal support shaft 18 allows display unit 11 to tilt forward and backward relative to unit holding member 15 about a first horizontal axis and horizontal pin 16 allows unit holding member 15, and consequently display unit 11, to tilt side-to-side about a second horizontal axis. Display unit 11 can be locked in place by tightening a curved adjusting disk 20 with respect to an adjusting shaft 19 with a screw 21. The adjusting shaft 19 extends from the bottom of display unit 11. Column 9, lines 28-31 of Ichikawa discloses that adjusting disk 20 can be moved or rocked forward, backward, to the left or to the right, to rock display unit 11 about horizontal pin 16 and horizontal shaft 18. There is no rotation of disk 20 or display 11 about a vertical axis in Ichikawa. Spacing support pin 16 away from horizontal holding arms 17 near the bottom of display unit 11 and close to adjusting shaft 19 provides adjusting disk 20 with a desired amount or range of rocking for adjustment about pin 16. This mounting, pivoting and locking arrangement of display unit 11 by such spaced apart components is a design that requires an extended amount of space, in comparison with the claimed invention, and as seen in FIGs. 2 and 3, does not have pivoting about a vertical axis.

FIG. 32 of Ichikawa depicts helmet 5 having left AL and right AR display locations on windshield 6 for viewing at left EL and right ER visual point positions. A pair of openings 74a and 74b are also found in nose guard 74 of helmet 5. FIG. 34 additionally depicts correcting optical systems, 737 and 738, reflecting mirrors 734, 735, and 736, a beam splitter 733 and lens 732, which are associated with display element 731. These components do not form first and second bases as claimed in the present invention since they are positioned within case body 73a of display 73 as shown in FIG. 33.

Accordingly, Claims 1-5, 7-15 and 17-20, as amended, are not anticipated by Ichikawa, since Ichikawa does not teach or suggest, "the display assembly having a first rotatable joint that is rotatable about a rotatable horizontal axis for allowing the display to be tilted upwardly and downwardly, and a second rotatable joint that is rotatable about a rotatable vertical axis for

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allowing the display to rotate about the vertical axis, the display being supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides as recited in base Claim 1, as amended, and similarly in Claim 11, as amended, or "the display being supported by the first rotatable joint between upright side members that extend upright from the second rotatable joint and surround the vertical axis on opposing sides", as recited in Claims 9 and 19, as amended. Furthermore, Ichikawa does not teach or suggest "a rotatable member having at least a partial circular portion that has a snap fit into the circular recess of the base through the entrance slot, the rotatable member being rotatable within the circular recess about the vertical axis," as recited in Claims 7, 10, and similarly in Claims 17 and 20, as amended. Finally, Ichikawa does not teach or suggest "a second base mounted to the face bar of the helmet for being below a second eye of the user to allow the user to select the position of at least one viewing display by snap fitting an associated rotatable member into the desired base" as recited in Claim 8, and similarly in Claim 18. Therefore, Claims 1-5, 7-15 and 17-20, as amended, are in condition for allowance.

Reconsideration is respectfully requested.

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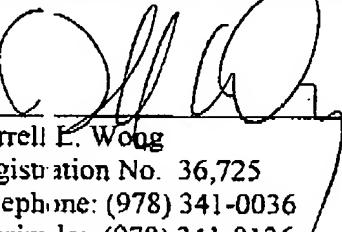
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CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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